



TECHNICAL INFORMATION

FOR

LUMINOUS EGRESS PATH MARKINGS LISTED TO UL1994

Underwriters Laboratories has completed a review of all EverGlow (Photoluminescent) Luminous Egress Path Markings components listed to the UL 1994 and CAN/ULC-S572 performance standards. The results of their testing are summarized in the table below. The most appropriate luminaires to properly charge photoluminescent signs and markings are at the top of this table. The energy emitted by the luminaire type, and absorbed by the EverGlow sample, decreases toward the bottom of this table. This data is valid for all UL 1994 listed path markings with EverGlow HI150, EverGlow HI300 and EverGlow TL300 luminance levels.

| Luminaire Type | Minimum Charging Illumination | Maximum Afterglow Duration | Minimum Color Temperature | Lighting Industry Nomenclature | | |
|------------------------------|-------------------------------|----------------------------|--|--------------------------------|-----------------|--|
| Fluorescent | 1 ft-c | 90 minutes | 4,000 K | cool white | | |
| Metal Halide | | | 4,000 – 4,500 K | | | |
| Mercury-Vapor | | | 3,500 – 4,000 K | | | |
| LED (blue LED with phosphor) | | | | | 2,700 – 4,500 K | soft or warm white to bright or cool white |
| Halogen | | | | | 2,700 – 3,000 K | soft or warm white to bright or cool white |
| Incandescent | | | | | 2,700 – 3,000 K | |
| Sodium-Vapor | | | does not reliably charge SrAl pigments | | 1,800 - 2,700 K | warm white |
| Neon | | | various | various | | |

EverGlow uses strontium aluminate (SrAl) photoluminescent pigments that absorb and store energy from appropriate artificial lighting and sunlight. Appropriate artificial lighting is any luminaire that emits sufficient energy in the visible blue or invisible UV portion(s) of the electromagnetic spectrum, or both. Fluorescent, Mercury Vapor and Metal Halide lamps all produce energy in the blue and UV regions of the spectrum; they create light making a blue spark between two electrodes. Incandescent and Halogen lamps create light by heating a wire filament until it glow red, in a vacuum or halogen gas atmosphere. Halogen lamps emit more blue light than standard incandescent lamps; they emit no energy in the UV region.

LED luminaires made with a blue LED and phosphor coating emit energy in the visible blue region of the spectrum but no energy in the UV. This discussion does not include LED luminaires using an RGB configuration. Because LED luminaires emit suitable energy only in the visible blue region of the spectrum, these luminaires do not charge photoluminescent signs and markings as well as cool white fluorescent lighting. EverGlow has tested LED luminaires from several manufacturers, typically advertised with color temperatures of 4,000 – 5,000 K and with advertised CRI of 80 or higher. The measured luminance on all photoluminescent samples charged using any LED luminaire is measurably lower than samples charged with our control fluorescent lamp (4,000 K, 48 inches long). In general, higher quality LEDs, optically transparent diffusers and luminaires with higher color temperatures and CRI values charge photoluminescent signs and markers better than LED luminaires with lower numbers.

EverGlow recommends that all projects using LED luminaires as the primary charging source for code approved photoluminescent egress path markings be designed very carefully so they provide minimum illumination of 1 ft-c when measured at floor level. If original fluorescent lighting is being replaced with LED luminaires, more LED luminaires may need to be installed or the spacing between luminaires may need to be changed or LED luminaires with higher lumen output may need to be installed to provide greater than the minimum illumination when measured at floor level.